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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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WILLIAMS, MORGAN & AMERSON
10333 RICHMOND, SUITE 1100
HOUSTON, TX 77042

EXAMINER	
SINGH, RAMNANDAN P	
ART UNIT	**PAPER NUMBER**
2614	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/21/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/717,365	BASS, ERIC	
	Examiner	Art Unit	
	Ramnandan Singh	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 8-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-12 and 21-24* is/are rejected.

7)☒ Claim(s) *13-20, 25-31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on Oct. 20, 2006 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

2. Claim 3 is objected to because of the following informalities:

Claim 3 recites the limitation, "The method pf claim 3" in line 1. This is in error.

For this Office action Examiner assumes this to be "The method of claim 1".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6, 9 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Godwin et al [US 4,620,069].

Regarding claim 1, Godwin et al teach a method implemented in Fig. 1, comprising:

providing a differential signal, wherein a two-wire telephone line inherently

transmits and receives differential signals [Fig.1; col. 1, lines 7-30]; and

performing a calibration of a gain of at least a portion of the differential signal to affect the longitudinal balance associated with the differential signal [Fig. 1; col. 11, line 59 to col. 12, line 2], performing the calibration comprises:

receiving a first portion (i.e. TIP) of the differential signal and determining a gain associated with the first portion (i.e. TIP) [Fig. 1, 5-6; col. 14, lines 39-68];

receiving a second portion (i.e. RING) of the differential signal and determining a gain associated with the second portion (i.e. RING) [Fig. 1, 5-6; col. 14, lines 39-68];

determining a difference between the respective gains of the first (i.e. TIP) and second (I.e. RING) portions to determine whether the difference is outside a predetermined range of tolerance (i.e. not perfectly balanced) and modifying (i.e. adjusting) at least one of the gain of the first portion (i.e. TIP) and the gain of the second portion (i.e. RING) based upon a determination that the difference is outside the predetermined range of tolerance (i.e. not perfectly balanced); wherein the automatic-gain balance processor (6) inherently performs determining a difference between the respective gains, and subsequently modifying at least one of the gains when the difference is outside the predetermined range of tolerance [Figs. , 1, 5; col. 14, lines 8-38].

Claim 9 is essentially similar to claim 1 and is rejected for the reasons stated above.

Claim 21 is essentially similar to claim 1 except for a line card. Godwin et al further teach using a line card coupling the subscriber line [Figs. 1-2; col. 1, lines 43-45; col. 13, lines 47-51].

Regarding claim 2, Godwin et al further teach the method, wherein receiving the signal comprises receiving the telecommunication signal [Figs. 1-2; col. 13, lines 25-65].

Regarding claim 3, Sue et al further teach the method, wherein receiving the telecommunications signal comprises receiving a TIP and RING signal [Figs. 1-2].

Regarding claims 4-5, the limitations are shown above.

Regarding claim 6, Godwin et al teach the method, wherein determining a difference between the respective gains of the first (i.e. TIP) and second (i.e. RING) portions further comprises applying a test load to an output associated with the first portion [col. 14, lines 52-68; claim 20].

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1-6, 8, 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sues et al [US 4,910,768] in view of IEEE Standard Test Procedures for Measuring Longitudinal Balance [ANSI/IEEE Std 455-1985].

Regarding claim 1, Sues et al teach a method , comprising:

providing a differential signal [Fig. 2; col. 4, line 64 to col. 5, line 2]; and

performing a calibration of a gain (i.e. measurement of an amplitude of the differential signal with respect to an amplitude reference) of at least a portion of the differential signal to affect the longitudinal balance associated with the differential signal [Fig. 2; col. 2, lines 32-52],

performing the calibration comprises:

receiving a first portion (i.e. TIP) of the differential signal and determining a gain associated with the first portion (i.e. TIP) [Fig. 2; col. 3, lines 61-67];

receiving a second portion (i.e. RING) of the differential signal and determining a gain associated with the second portion (i.e. RING) [Fig. 2; col. 3, lines 61-67];

determining a difference between the respective gains of the first (i.e. TIP) and second (I.e. RING) portions to determine whether the difference is outside a predetermined range of tolerance (i.e. not perfectly balanced) [Fig. 2; col. 4, lines 3-55; col. 4, line 66 to col. 5, line 2; col. 6, lines 3-6]; and

modifying (i.e. adjusting) at least one of the gain of the first portion (i.e. TIP) and the gain of the second portion (i.e. RING) based upon a determination that the

difference is outside the predetermined range of tolerance (i.e. not perfectly balanced) [Figs. 1-2; col. 4, line 28 to col. 5, line 2; Fig. 3; col. 5, lines 21-46; col. 6, lines 3-6].

Although Sues et al teach an automatic balancing circuit for longitudinal transmission system using balance measurements set [Fig. 2; col. 3, lines 61-67], they do not teach expressly calibration performed by repeating measurements.

IEEE Standard 455-1985 states: "Basically, calibration consists of balancing the internal impedance of the driving test circuit portion of the measurement set against the internal impedances of the terminating test portion" [Appendix B, Page 18]. Further, the standard teaches frogging the interconnections between driving and terminating test circuits, as shown by broken lines in Fig. B1 [Pages 18-19]. In addition, the Standard defines a balance circuit , wherein the "longitudinal balance" can be expressed in terms of a gain defined by a ratio of two voltages [Page 8].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the calibration method of the IEEE Standard with Sue et al so that the longitudinal balance calibration of Sue et al is consistent with the Standard.

Claim 9 is essentially similar to claim 1 and is rejected for the reasons stated above.

Claim 10 is essentially similar to claim 1 except for a first and second amplifier.

Sue et al teach an apparatus comprising : a first amplifier (40) to receive a first portion of a differential signal (RING) and a second amplifier (39) to receive a second portion of the differential signal to generate a differential output signal using a summing circuit (12) [Figs. 2-3].

Regarding claim 2, Sue et al further teach the method, wherein receiving the signal comprises receiving the telecommunication signal [Fig. 2; col. 5, lines 10-20].

Claim 11 is essentially similar to claim 2 and is rejected for the reasons stated above.

Regarding claim 3, Sue et al further teach the method, wherein receiving the telecommunications signal comprises receiving a TIP and RING signal [Fig. 2; col. 5, lines 10-20].

Claim 12 is essentially similar to claim 3 and is rejected for the reasons stated above.

Regarding claim 4, the limitations are shown above.

Regarding claim 5, Sue et al further teach the method comprising modifying the signal associated with the TIP signal forward and the gain of a signal associated with the RING signal forward [Fig. 2 ; col. 4, lines 28-65].

Regarding claim 6, IEEE Standard 455-1985 further teaches the method, wherein determining a difference between the respective gains of the first (i.e. TIP) and second (i.e. RING) portions further comprises applying a test load to an output associated with the first portion [Fig. B1; Appendix B; Page 18].

Regarding claim 8, IEEE Standard 455-1985 further teaches the method, wherein applying the test load comprises applying a resistive load [Fig. B1; Appendix B; Page 18].

7. Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sues et al [US 4,910,768] in view of IEEE Standard Test Procedures for Measuring Longitudinal Balance [ANSI/IEEE Std 455-1985], and further in view of Lynch [US 6,724,880 B1].

Regarding claim 21, Sue et al teach a system, as shown in Fig. 2, comprising:

a subscriber line [Fig. 2; TIP conductor 31 and RING conductor 32];

providing a differential signal [Fig. 2; col. 4, line 64 to col. 5, line 2]; and

performing a calibration of a gain (i.e. measurement of an amplitude of the differential signal with respect to an amplitude reference) of at least a portion of the differential signal to affect the longitudinal balance associated with the differential signal [Fig. 2; col. 2, lines 32-52],

performing the calibration comprises:

receiving a first portion (i.e. TIP) of the differential signal and determining a gain associated with the first portion (i.e. TIP) [Fig. 2; col. 3, lines 61-67];

receiving a second portion (i.e. RING) of the differential signal and determining a gain associated with the second portion (i.e. RING) [Fig. 2; col. 3, lines 61-67];

determining a difference between the respective gains of the first (i.e. TIP) and second (I.e. RING) portions to determine whether the difference is outside a predetermined range of tolerance (i.e. not perfectly balanced) [Fig. 2; col. 4, lines 3-55; col. 4, line 66 to col. 5, line 2; col. 6, lines 3-6]; and

modifying (i.e. adjusting) at least one of the gain of the first portion (i.e. TIP) and the gain of the second portion (i.e. RING) based upon a determination that the difference is outside the predetermined range of tolerance (i.e. not perfectly balanced) [Figs. 1-2; col. 4, line 28 to col. 5, line 2; Fig. 3; col. 5, lines 21-46; col. 6, lines 3-6].

Although Sues et al teach an automatic balancing circuit for longitudinal transmission system using balance measurements set [Fig. 2; col. 3, lines 61-67], they do not teach expressly calibration performed by repeating measurements.

IEEE Standard 455-1985 states: "Basically, calibration consists of balancing the internal impedance of the driving test circuit portion of the measurement set against the internal impedances of the terminating test portion" [Appendix B, Page 18]. Further, the standard teaches frogging the interconnections between driving and terminating test circuits, as shown by broken lines in Fig. B1 [Pages 18-19]. In addition, the Standard defines a balance circuit , wherein the "longitudinal balance" can be expressed in terms of a gain defined by a ratio of two voltages [Page 8].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the calibration method of the IEEE Standard with Sue et al so that the longitudinal balance calibration of Sue et al is consistent with the Standard.

Sue et al do not teach expressly using a line card coupling the subscriber line.

Lynch teaches using a line card (140A) coupling the subscriber line, wherein the line card is adapted to provide a differential signal [Figs. 3-4; col. 4, line 57 to col. 5, line 10; col. 5, line 54 to col. 6, line 8; col. 8, lines 43-56].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Lynch with Sue et al so that a single line card may interface with a substantial number of telecommunications lines, in high density systems [Lynch; col. 2, lines 63-66].

Regarding claim 22, Sue et al further teach an apparatus comprising : a first amplifier (40) to receive a first portion of a differential signal (RING) and a second amplifier (39) to receive a second portion of the differential signal to generate a differential output signal using a summing circuit (12) [Figs. 2-3]. The other limitations are shown above.

Regarding claim 23, Sue et al further teach the method, wherein receiving the signal comprises receiving the telecommunication signal [Fig. 2; col. 5, lines 10-20].

Regarding claim 24, Sue et al further teach the method, wherein receiving the telecommunications signal comprises receiving a TIP and RING signal [Fig. 2; col. 5, lines 10-20].

Allowable Subject Matter

8. Claims 13-20 and 25-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Dependent claim 13 recites the apparatus further comprising, and limitations for the following: "a third amplifier to provide said gain associated with said first portion of said differential output; a fourth amplifier tom provide said again associated with said second portion of said differential output signal; a first current source electrically

coupled to said third amplifier and to said calibration unit, said calibration to control said gain associated with said first portion of said differential output signal by controlling said first current source; and a second current source electrically coupled to said fourth amplifier and to said calibration unit, said calibration to control said gain associated with said second portion of said differential output signal by controlling said second current source". The prior art of record does not teach these limitations.

New search updates revealed no other prior art which teaches the limitations in the context of the claims. Therefore, claim 13 is objected to.

Claims 14, 25 and 26 are essentially similar to claim 13, and hence they are also objected to for the reasons stated above. Claims 15-20 being dependent from claim 14 and claims 27-31 being dependent from claim 26 are objected to.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ramnandan Singh
Examiner
Art Unit 2614